LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES

# TB TIMES

December, 2000 Volume 12 Number 12

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## Year-End Reflections from Dr. Davidson

My wish for all the readers of TB Times is that they have a very happy holiday season and enter the New Year with great expectations.

For the Tuberculosis Control Program the year 2000 has been a year of change and also of important accomplishments. Staff has been working hard and successfully even as they adjust to new circumstances of supervision and working space. The Editorial Staff of the TB Times has developed a new format for the Times that offers easier readability, regular use of color, and more professional printing and processing.

The CDC Cooperative Agreement grant was successfully completed and includes continued funding for targeted testing contracts with several community based health care organizations. We expect the CDC funding to remain level for at least 5 years. In addition Los Angeles County TB Control Program was one of two locations in the U. S. to receive CDC funding to evaluate and improve the way tuberculosis is managed in the correctional system with an emphasis on our County Jail. Recruiting for persons to manage this project is currently under way.

The State of California tuberculosis subvention funding was also continued during 2000. It too should remain level or possibly somewhat increased during the next few years. This funding in addition to supporting a number of staff positions in TB control also has made possible the development of the High Desert Hospital (HDH) Skilled Nursing and Detention facility. This project has moved forward this year and is now in its final phase of development. This includes provision for long-term apartment style housing for tuberculosis patients including incurable cases, and x-ray capacity at the Acton Rehabilitation facility. The HDH facility has been under increasing demand and has successfully provided services to other jurisdictions as well as Los Angeles County. It is truly becoming a Regional Center for treating tuberculosis.

It now appears that the year 2000 will be the eighth consecutive year of decline in the number of tuberculosis cases reported in Los Angeles County. The investment of CDC, State, and local funding to control and eventually eliminate this disease seems to be paying off. However, there is a long ways to go. In addition, there appears to be a trend toward more difficult to manage patients as suggested by the increasing demand for the HDH facility. It is quite likely that the remaining tuberculosis problems will be more and more difficult to manage with time. The corollary to that is it will take more and more money per

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### Upcoming Conferences

- January 5, 2001 9:00 a.m. - 10:30 a.m.
  Orthopaedic Hospital - Andrew Norman Hall
  ***"M. tuberculosis* Complex and Other Mycobacteria"**
  Andrea Linscott, Ph.D., Technical Supervisor, L.A. County Public Health Laboratory

- January 5, 2001 10:30 a.m. - 12:00 p.m.
  Orthopaedic Hospital - Andrew Norman Hall
  **Physician Case Presentation**
  Annette Nitta, M.D.

- January 11, 2001 9:00 a.m. - 12:00 p.m.
  TB Control Program Headquarters, Room 506
  **Mantoux Skin Testing Class**
  (Seating is limited/pre-registration required - please call 213-744-6229 for information)

- January 19, 2001 9:00 a.m. - 11:30 a.m.
  TB Control Program Headquarters, Room 506
  **Physician Case Presentation**
  Steve Leong, M.D. and Vincent Hsu, M.D.

**Happy Holidays from all of us at TB Times!**

# Tuberculosis and H.A.A.R.T.

As we celebrate World AIDS Day this month, we can reflect on the remarkable advances that have been made in the treatment of tuberculosis in HIV infected patients. Highly Active Antiretroviral Therapy (HAART) has markedly improved the survival and quality of life of patients co-infected with HIV and TB.

Almost all HIV positive TB patients at the LAC+USC Medical Center present with advanced immunosuppression and high HIV viral loads. The survival of patients with HIV-related TB was limited in the early 1990s, with most deaths occurring from complications of HIV, and not TB. In reviewing our ten year experience at the LAC+USC HIV clinic (5P21), HAART has increased the percentage of patients who survive to complete TB treatment from 75 to 95%. Patients on HAART continue to do well after completing TB treatment and 90% of patients have at least a three year survival rate.

Combination antiretroviral treatment regimens have many analogies to TB treatment regimens. Multiple drugs are used to prevent the development of drug resistance. Current antiretroviral regimens consist of three or more drugs from one to three different classes of drugs: nucleoside analogues (NRTIs), non-nucleoside reverse-transcriptase inhibitors (NNRTIs), and protease inhibitors (PIs). The role of adherence is extremely important to the success of therapy.

Given the effectiveness of HAART in reversing HIV-induced immunodeficiency, the use of antiretroviral therapy has the potential to dramatically improve clinical outcomes. However, there are a number of aspects which complicate the use of antiretroviral therapy among persons being treated for TB:

1. Complex drug-drug interactions between the rifamycins
2. The phenomenon of immune restoration syndromes ("paradoxical reactions")

The mechanisms of drug-drug interactions between these classes of drugs involves cytochrome P450 inhibition and induction. The substitution of rifabutin for rifampin is necessary when used with HAART. Marked decreases in concentrations of antiretroviral drugs can occur and decrease antiretroviral activity. Substantial increases in rifabutin concentrations can cause leukopenia, uveitis, arthralgias, and skin discoloration. (See table for suggested dose adjustments).

Paradoxical reactions have been described as the transient worsening or appearance of new signs, symptoms, and/or radiographic manifestations of TB that are not due to treatment failure of a second process. Paradoxical reactions have been noted for many years and are thought to represent immune reactivity to antigens released as tubercle bacilli are killed by drug therapy. Coined a "HAART attack" by some investigators, paradoxical reactions can occur in up to 36% of HIV positive TB patients, usually within days to weeks of starting antiretroviral therapy. Most paradoxical reactions are self-limited; however, severe reactions occasionally require treatment with steroids. Despite the complexities, patients with HIV-related TB can have an excellent response to HAART. Successful use of HAART in the context of TB treatment requires close coordination between TB and HIV care providers.

***Brenda Jones, M.D.***

**Table. Rifabutin dose with antiretroviral therapy[1]**

| Antiretroviral drug regimen | TB Treatment Phase | Action |
|---|---|---|
| Indinavir, nelfinavir, amprenavir[2] | **Daily** | **⇩ rifabutin to 150 Q** |
| Indinavir, nelfinavir, amprenavir | **Intermittent** | **Use 300 BIW** |
| Saquinavir[3] | **Any phase** | **Use 300, either daily or BIW** |
| Ritonavir (any dose) | **Any phase** | **⇩ rifabutin to 150 BIW** |
| Efavirenz (EFV) | **Any phase** | **⇧ rifabutin to 600 mg QD or BIW** |
| Nevirapine (NEV) | **Any phase** | **Use 300, either daily or BIW** |
| PI (except RTV) + NNRTI (EFV or NEV) | **Any phase** | **Use 300, either daily or BIW** |
| Evidence of rifabutin toxicity[4] | **Intermittent** | **⇩ rifabutin to 150 mg** |

[1] Based on Bill Burman, MD Denver Public Health
[2] Unclear if doses of PIs should be changed when used with RBT: can consider increasing indinavir to 1000 q8h, increase nelfinavir to 1000 TID or use 1250 BID.
[3] Saquinavir, as a single PI, may not be optimal with RBT.
[4] Uveitis, vomiting after doses, myalgias, skin pigmentation, and neutropenia.

# WORLD TB UPDATE

***A summary of selected TB news and journal articles compiled from the CDC HIV/STD/TB Prevention News Update***

### Undetected Tuberculosis May Have Been Real Killer in 1918 Flu Epidemic

In one year—1918—half a million Americans and 20 million worldwide died from a contagion often identified as the deadliest epidemic of the 20th century. Now a researcher at the University of California, Berkeley, has evidence that undetected TB actually may have caused much of the mortality in 1918. Andrew Noymer, UC Berkeley doctoral student in demography, published his findings in the September issue of Population and Development Review. Noymer's evidence comes from patterns of mortality in the U.S. population in the years after the epidemic year. Death rates from TB fell dramatically in 1919 and 1920 and, for decades thereafter, changed an historic gender pattern in mortality. Apparently, those who died from the flu already had diseased lungs. When they got the flu it turned into pneumonia which, in those people with TB became especially severe. TB creates cavities in the lungs that are notorious breeding grounds for *S. aureus* bacteria which causes a pneumonia that was actually the killer in 1918. It was the pneumonia complicated by TB that killed them, said Noymer. Their early demise depressed the death rate from TB in the following years. Noymer's findings explain a peculiarity of the 1918 pandemic. Normally, the influenza virus is not lethal to young and middle-aged people. But in 1918, the typical victim was a man between the ages of 20 and 40, a group that normally has a very low death rate. In the early 20th century, however, TB was a major killer of men in that age group, apparently because of transmission in factories where men worked in densely-packed, poorly-ventilated conditions, Noymer said. Men were about 30 percent more likely to die from TB than women were—a pattern closely paralleled during the flu epidemic. In 1918, men were 35 percent more likely than women to die from flu. "This can't be a coincidence," said Noymer. "I think TB is the missing piece of the puzzle. It explains why younger people, especially men, died in such great numbers.

His findings explain another mystery. Scientists who have attempted to study the gene sequence of the 1918 influenza virus have seen nothing out of the ordinary,

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## Staff Update

Congratulations to Tearah Taylor, P.H.N., who was recently promoted to Assistant Program Specialist. She will be supervising the Liaison Public Health Nurses at the County Hospitals and the Los Angeles County Sheriff's Department Facilities. Tearah's office has also been re-located to TB Control Program Headquarters from King/Drew Medical Center, where she previously served as Liaison Public health Nurse.

We also congratulate Rhena Carusillo, P.N.N. who will be leaving after 3 years with TB Control and 8 years with the Department of Health Services. She will be accepting as a position as Supervising Public Health Nurse with the Orange County Health Department, also known as the Health Care Agency, County of Orange. Rhena, who has worked so hard and capably in the TB/HIV Unit, will be sorely missed. She will be assigned to the Pulmonary Disease Service in the INH Therapy Unit. Best wishes, Rhena, for many future successes!

A warm welcome is extended to Houda Assaly who started this month as a Research Analyst II. She will be transitioning into the Incentive and Enabler Project Coordinator position and will be assisting TB Control Administration with other projects. Ms. Assaly has a Masters Degree in Sociology and a Bachelor in Social Work. Her experience as a social worker and in research will be a strong asset to the Program.

Next month, the Health Education Unit will welcome Luciano Acevedo who will be working as a graduate student intern. Luciano, who has a Bachelors Degree in Biology, is currently enrolled at California State University, Northridge in the Health Sciences Department and is completing his course work in Health Education toward an M.P.H. Degree. Mr. Acevedo has worked as a Health Educator with the Northeast Valley Health Corporation and is currently employed by the Westside Regional Center in Culver City. A number of interesting projects await him at TB Control when he begins his internship in January.

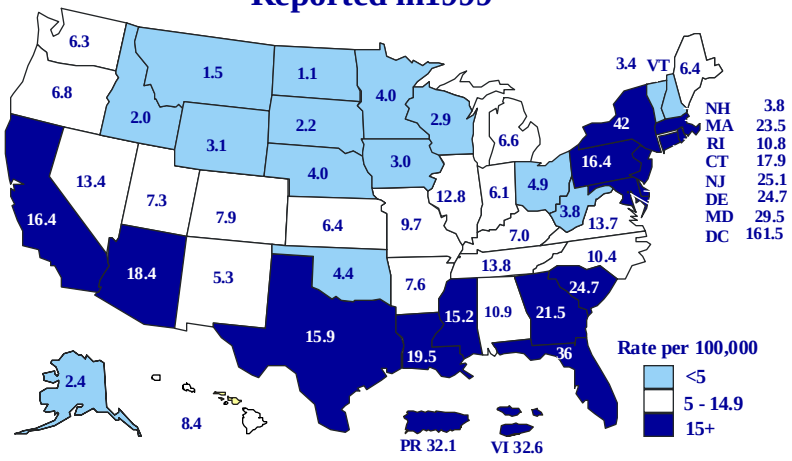
## Errata

In the Nov. 2000 issue of the TB Times, Pomona Health Center's article we mispelled Public Health Nurse, Debra Porada' name. We apologize for the error.

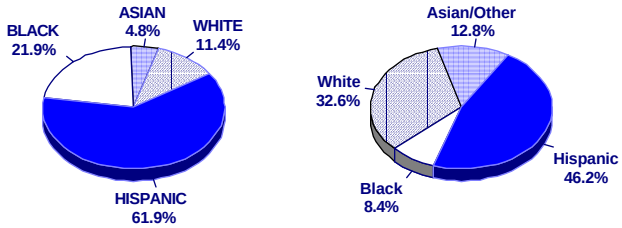
# Los Angeles County Department of Health Services
# Tuberculosis Control Program
## *1999 Epidemiology Fact Sheet*
## HIV Co-infection among Tuberculosis Cases

Globally, an estimated 35 million children and adults are infected with HIV. The cumulative number of HIV/AIDS deaths has been estimated at 19 million. Through September 2000, a total of 41,902 individuals have been diagnosed with AIDS in Los Angeles County with a case fatality rate of 63%. Los Angeles County comprises 35% of the California and 6% of the US AIDS cases. The number of reported AIDS cases in 1999 In Los Angeles County was 1957.

### AIDS Rates per100,000 Population Reported in1999




### Race/Ethnicity of HIV Co-infected TB Cases Los Angeles County, 1999




LAC Co-infected Cases

LAC Population

Data Exclude Long Beach & Pasadena TB Cases

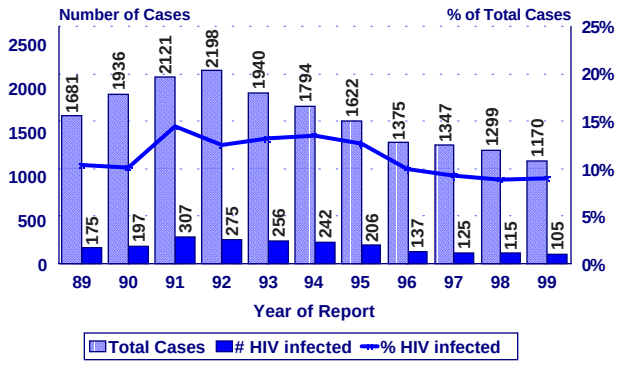
LAC DHS TB Control Program Epidemiology Unit

Tuberculosis continues to be a public health threat. HIV positive persons are ten times more likely to develop TB if they are infected with the mycobacterium tuberculosis organism than their HIV negative counterparts. In Los Angeles County, TB continues to be a problem particularly in the foreign-born, homeless and persons co-infected with HIV (human immunodeficiency virus), despite the decline in the overall TB cases reported over the past seven years.

In 1999, there were 1,170 confirmed cases of TB in Los Angeles County. Of the 1,170 confirmed cases, 63% were tested for HIV and 105 (9%) were HIV positive. Of these 105 co-infected patients, 94 were male and 11 were female.

In 1999, there was a total of 13 homeless cases that were co-infected with HIV. The racial breakdown among the HIV co-infected TB cases in Los Angeles County was 62% Hispanic, 22% African American, 11% White, and 5% Asian.

### HIV Infection Among TB Cases by Year of Report Los Angeles County, 1989-1999




Data Exclude Long Beach and Pasadena TB Cases

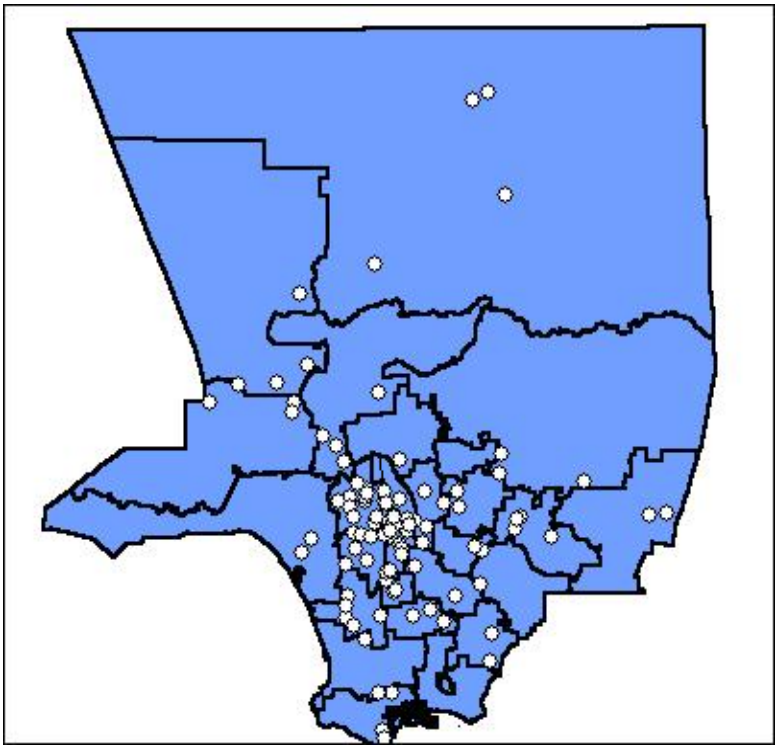
LAC DHS TB Control Program Epidemiology Unit

In 1999, 38 (36%) of the HIV co-infected cases were 35-44 years old. This significantly changed from 1998 where 53 (46%) cases were 15-34 years of age.

Sixty-six percent (69 cases) of the co-infected TB cases were foreign-born. Of these 69 individuals, 44 were from Mexico, 7 from Guatemala, 3 from El-Salvador, and the remaining 15 were from 14 other countries.

The Los Angeles County TB Control Program recommends that all HIV co-infected TB cases be placed on Directly Observed Therapy (DOT). In 1999, eighty eight (84%) of the HIV co-infected cases were receiving directly observed therapy (DOT) upon initiation of treatment.

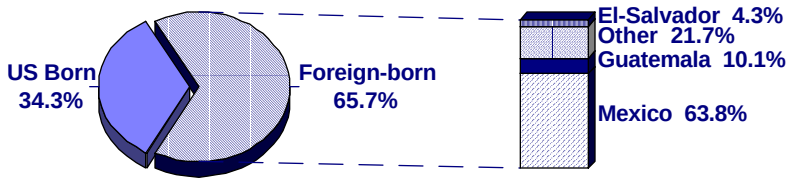
**Distribution of HIV-Coinfected TB Cases**
**Los Angeles County, 1999**



To assess completion of treatment among HIV positive TB cases, 1998 cases of TB disease were selected to assure adequate time had passed for all cases to be completed. Of the 113 HIV co-infected TB cases confirmed in 1998, 112 were placed on treatment. One died before treatment. Sixty three (56%) completed treatment in less than one year, 13 cases (11.6%) completed treatment longer than one year, 2 cases (1.8%) were lost to follow-up, 11 cases (9.8%) moved, 22 cases (19.6%) died, and 1 case (0.9%) was still on treatment.

Completion of treatment for HIV positive persons with Latent TB Infection (LTBI) during the same period (1/1/98-12/31/98), is as follows: Of the 81 persons who started LTBI treatment, 25 (31%) were reported as having completed treatment. Five (6%) were lost to follow-up, 5 (6%) moved, 5 (6%) stopped against medical advice, 4 (5%) stopped due to side effects or other medical conditions, and the outcome of the remaining 37 cases (46%) is unknown.

**HIV Co-infected TB Cases by Country of Origin**
**Los Angeles County, 1999**




Data Exclude Long Beach & Pasadena TB Cases

LAC DHS TB Control Program Epidemiology Unit

In 1999, the Public Health Service Planning Area (SPA) with the largest number of TB cases co-infected with HIV was Metro (36), which includes Hollywood, Northeast, and Central Health Districts. The second highest number was in the South Service Planning Area ( 21) which includes South, Southeast, Southwest, and Compton Health Districts.

*Continued from page 1*

case to get the job done. We can only hope that level funding will be adequate. Cuts would likely lead to stagnation or possibly even a resurgence of the disease!

The year 2001 will have a number of challenges as well as priorities. Standards for Los Angeles County are soon to be released concerning targeted testing for TB and the treatment of latent TB infection (LTBI). A focus on finding cases as early as possible and evaluating contacts of cases must be high priorities if we want to make inroads into eliminating tuberculosis by preventing transmission to the uninfected. Tuberculosis is receding into scattered pockets of the population. We must learn how to identify these populations better and develop strategies for eliminating the disease in these settings. We have been relatively successful in addressing many of the problems of TB in the homeless. We need to become more innovative in attacking other high-risk groups as well. An example is that of the elderly. Little effort has been made to prevent disease by treating LTBI in the elderly because of concern regarding medication side effects. This should be looked at more carefully since we should expect tuberculosis, if it is under good control, to become increasingly a disease of the elderly. If not prevented in the infected elderly, they will become a source of transmission of the disease to each other, but, more importantly, to the younger generations. This will have the potential for setting back the goal of eliminating tuberculosis by years unless new technology is also made available to address this problem.

The elimination of tuberculosis is increasingly becoming a responsibility for the entire health care system rather than strictly limited to the public health department sector. This is partly a consequence of the recession of tuberculosis into potentially isolated pockets of infection and disease. One priority for the TB Control Program in Los Angeles County for 2001 will be to continue our efforts as well as encourage increasing efforts to work with personal health care providers in general but, in particular, the private health-care system to partner in eliminating this serious public health disease.

I am sure that the readers of TB Times also have a number of priorities and predictions that could be added to the list. The challenges will certainly continue for years beyond 2001!

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*Continued from page 3*

nothing to explain the flu's virulence. "Never before or since have we seen a flu epidemic that was so virulent," said Noymer. "The spread was extremely rapid…almost everyone who died was gone in two weeks. I do believe my finding explains most of the deadliness of the 1918 epidemic. It doesn't prove that, if another strain were to appear, that the U.S. population would be safe, but it strongly suggests that we would fare much better." Noymer's analysis shows that the 500,000 people who died in 1918 were almost exactly the number who would have been in various stages of disease from TB. Using pre-1918 death rates, Noymer calculated that 500,000 more TB deaths would have occurred between 1918 and 1932 had there never been a flu epidemic. As a result of the excess death among men in 1918, a healthier male population was left, said Noymer. For years afterward, the life expectancy of men, which usually lagged behind women by six years, moved up to more closely resemble the female pattern. It was this startling change that sparked Noymer's research, when he saw something no demographer had ever noticed before—a precipitous drop in 1919 in the gender differential from six to two years. "When I saw that," said Noymer, "I said to myself, 'That's the flu!' And, surprise, surprise, it leaves the same mortality patterns on age and sex that TB does."

## Final Case Reporting Notice!!!

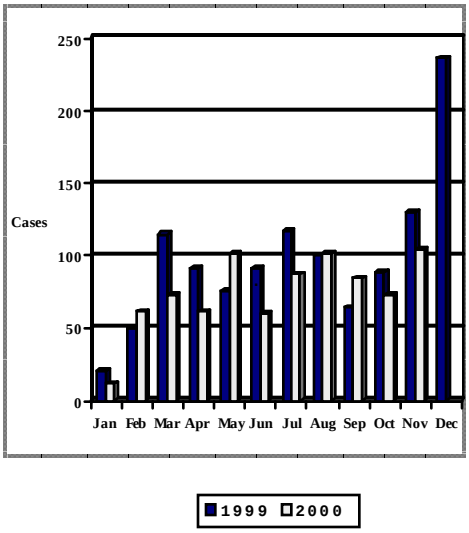
As the year rapidly draws to a close, we would like to remind everyone to update their casework and to report all TB confirmations. All cases need to be confirmed by December 31, 2000 in order to be accurately included in the case count for 2000. As of December 11, 2000, there were 131 out of 761 culture positive TB suspects that were not confirmed. TB Control urges the Districts to submit outstanding paperwork. If you have questions about reporting, call at 213-744-6160.

# Tuberculosis Cases by Health District
# Los Angeles County, November 2000
# (Provisional Data)

| Service Area | Service Area Total Year to Date | Health District | Nov-00 | Nov-99 | Year to Date | Year to Date 1999 |
|---|---|---|---|---|---|---|
| SPA 1 | 7 | Antelope Valley | 0 | 4 | 7 | 20 |
| SPA 2 | 119 | East Valley | 4 | 5 | 24 | 38 |
| | | West Valley | 8 | 6 | 52 | 45 |
| | | Glendale | 2 | 3 | 25 | 21 |
| | | San Fernando | 2 | 5 | 18 | 26 |
| SPA 3 | 132 | El Monte | 3 | 3 | 43 | 54 |
| | | Foothill | 2 | 7 | 15 | 20 |
| | | Alhambra | 3 | 5 | 48 | 55 |
| | | Pomona | 3 | 4 | 26 | 23 |
| SPA 4 | 215 | Hollywood | 12 | 14 | 74 | 90 |
| | | Central | 12 | 13 | 101 | 97 |
| | | Northeast | 6 | 7 | 40 | 52 |
| SPA 5 | 31 | West | 7 | 6 | 31 | 32 |
| SPA 6 | 130 | Compton | 5 | 7 | 28 | 35 |
| | | South | 2 | 7 | 25 | 29 |
| | | Southeast | 2 | 3 | 24 | 22 |
| | | Southwest | 7 | 8 | 53 | 57 |
| SPA 7 | 106 | Bellflower | 7 | 1 | 34 | 37 |
| | | San Antonio | 7 | 6 | 39 | 39 |
| | | Whittier | 1 | 1 | 13 | 24 |
| | | East Los Angele | 3 | 2 | 20 | 23 |
| SPA 8 | 78 | Inglewood | 5 | 2 | 39 | 43 |
| | | Harbor | 0 | 1 | 12 | 10 |
| | | Torrance | 2 | 5 | 27 | 36 |
| Unassigned | 4 | Unassigned | 0 | 3 | 4 | 8 |
| TOTAL | 822 | | 105 | 128 | 822 | 936 |

# Los Angeles County Tuberculosis Incidence

## By Month of Report, 1999-2000

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***TB Times*** is a monthly publication providing information to those interested in TB surveillance and TB Control Program activities. Please forward your articles, comments, suggestions or address corrections to:

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